Patent Claims

1. Alignment layer suitable for aligning liquid crystal (LC) molecules, characterized in that it comprises at least one reactive mesogen (RM) in monomeric, oligomeric or polymeric form.

2. Alignment layer according to claim 1, characterized in that it comprises less than 50 % by weight of RMs.

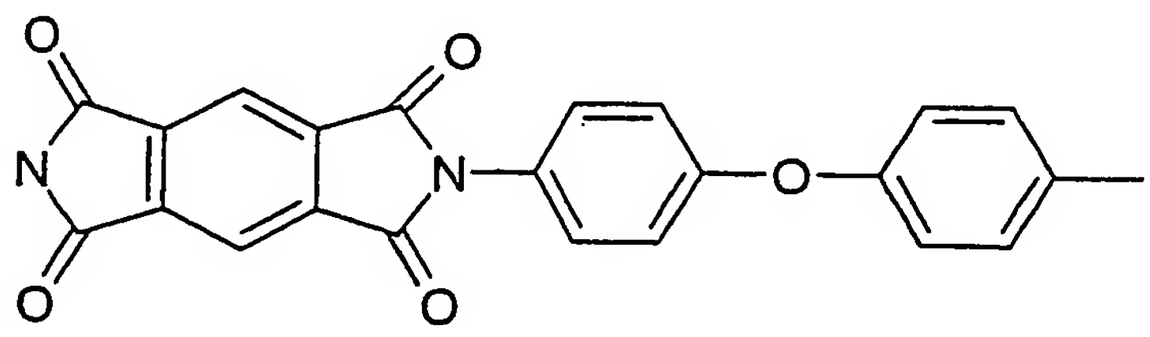
3. Alignment layer according to claim 1 or 2, characterized in that the RM(s) is(are) present in monomeric or oligomeric form in the alignment layer after its preparation.

4. Alignment layer according to at least one of claims 1 to 3, characterized in that it is obtainable from a precursor material comprising at least one reactive mesogen (RM).

5. Alignment layer according to at least one of claims 1 to 4, characterized in that it is a solvent processed film.

6. Alignment layer according to at least one of claims 1 to 5, characterized in that it is a polyimide film.

7. Alignment layer according to claim 6, characterized in that it is a polyimide film of the general formula A



A

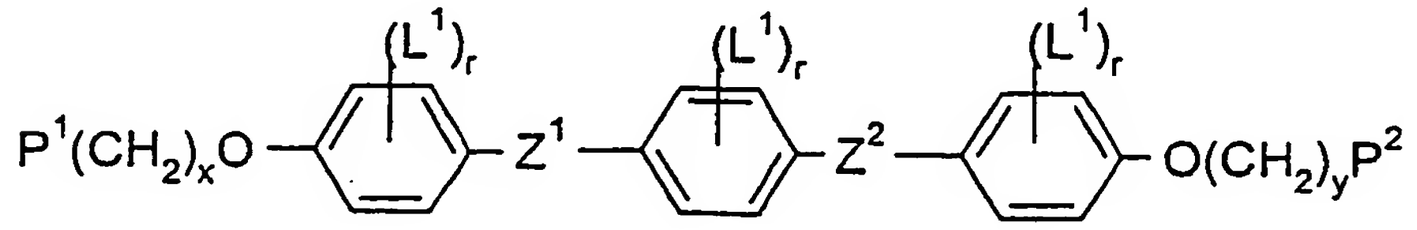
8. Alignment layer according to at least one of claims 1 to 5, characterized in that it is a solvent processed cellulose based film.

9. Alignment layer according to at least one of claims 1 to 5, characterized in that it is a triacetate cellulose (TAC) or diacetate cellulose (DAC) film.

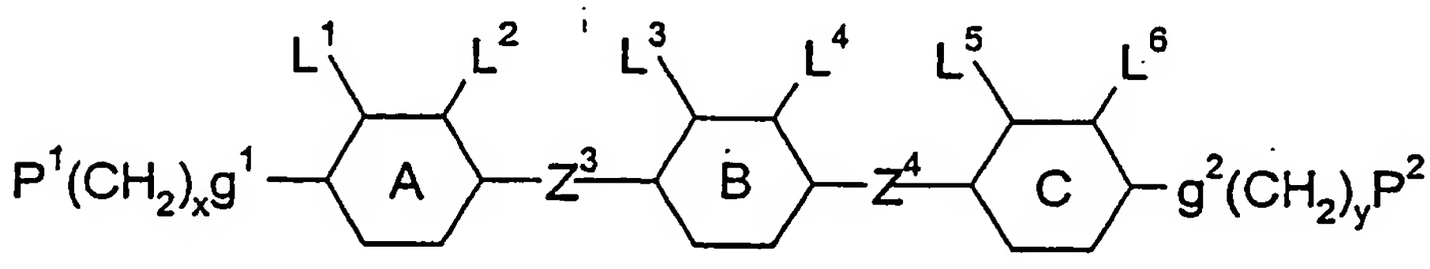
10. Alignment layer according to at least one of claims 1 to 5, characterized in that it is a command layer comprising one or more compounds selected from photochromic compounds, isomerisable compounds, chromophores and dyes, wherein changes of the chemical structure and/or the orientational direction of these compounds induce a specific alignment of an LC material coated onto said layer.

11. Alignment layer according to claim 10, characterized in that said compounds are selected from derivatives of azobenzene, stilbenes, spiropyran, spirooxadines, α-hydrazono-β-ketoesters, cinnamate, retinylidene, chalcone, coumarins, benzylidenephthalimidines, benzylideneacetophenones, diphenylacetylene or stilbazoles.

12. Alignment layer according to at least one of claims 1 to 11, characterized in that the RMs are selected of the following formulae



I



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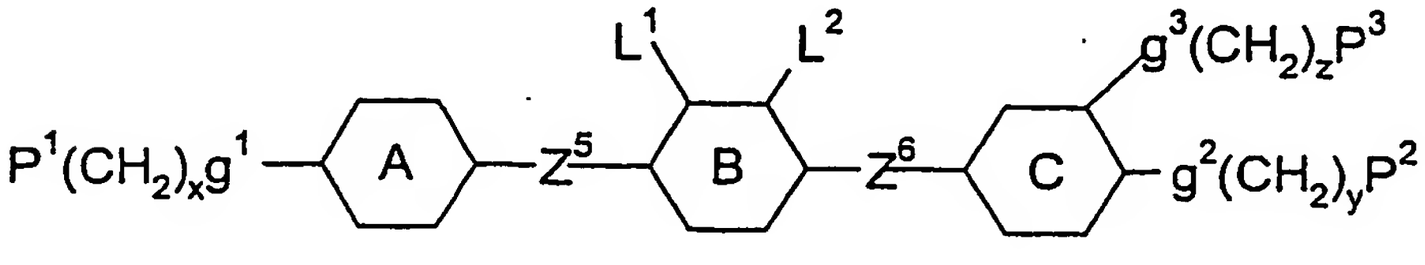

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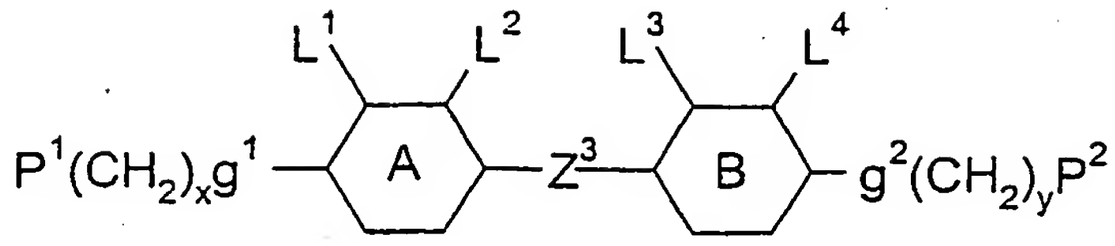

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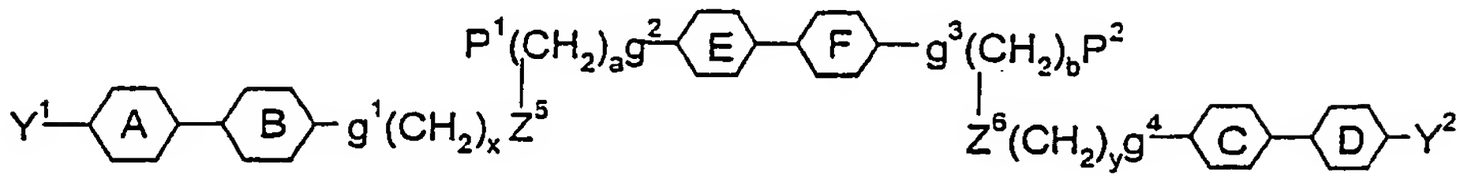

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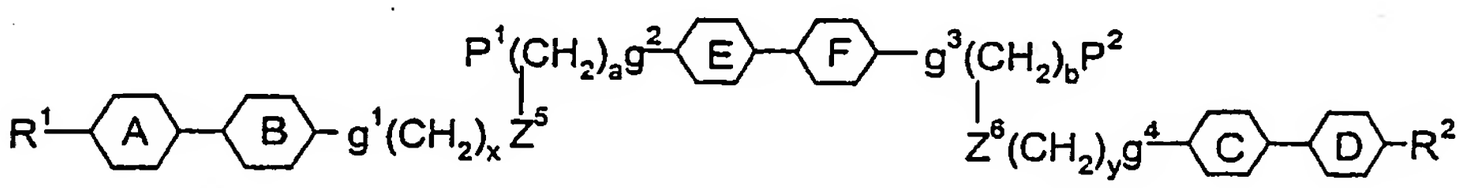


VI

wherein

P^1, P^2 and P^3 are independently of each other a polymerisable group,

Z^1 and Z^2 are independently of each other, -O-, -S-, -CO-, -COO-, -OCO-, -O-COO-, $-OCH_2-$, $-CH_2O-$, $-CH_2CH_2-$, -C≡C-, -CH=CH-COO-, -OCO-CH=CH- or a single bond,

Z^3 and Z^4 are independently of each other -COO-, -OCO-, $-CH_2CH_2-$, $-CH_2O-$, $-OCH_2-$, -CH=CH-, -CF=CF-, -C≡C- or a single bond,

Z^5 and Z^6 are independently of each other -O-, -COO-, -OCO-, $-CH_2CH_2-$, $-CH_2O-$, $-OCH_2-$ or a single bond,

Y^1 and Y^2 are independently of each other a polar group,

R^1 and R^2 are independently of each other an unpolar alkyl or alkoxy group,

A, B, C and D are independently of each other 1,4-phenylene that is optionally mono- di or trisubstituted by L^1, L^2, L^3, L^4, L^5, L^6 or 1,4-cyclohexylene,

L^1, L^2, L^3, L^4, L^5 and L^6 are independently of each other H, F, Cl, CN or an optionally halogenated alkyl, alkoxy, alkylcarbonyl, alkoxycarbonyl or alkoxycarbonyloxy group with 1 to 7 C atoms.

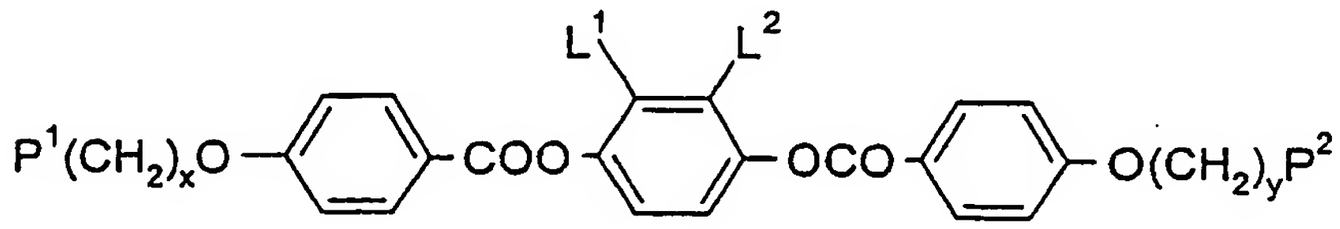
r is 0, 1, 2, 3 or 4,

x and y are each independently an integer from 1 to 12,

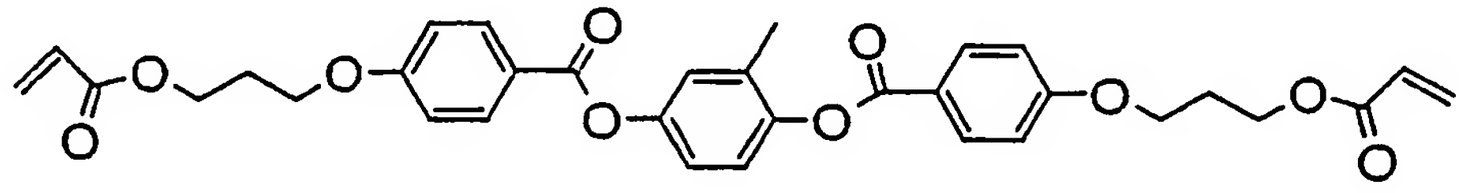
z is 1, 2 or 3,

g^1,g^2,g^3 and g^4 are independently of each other a single bond, -O-, -COO- or –OCO-,.

13. Alignment layer according to claim 12, characterized in that the RMs are selected of the following formulae



Ia



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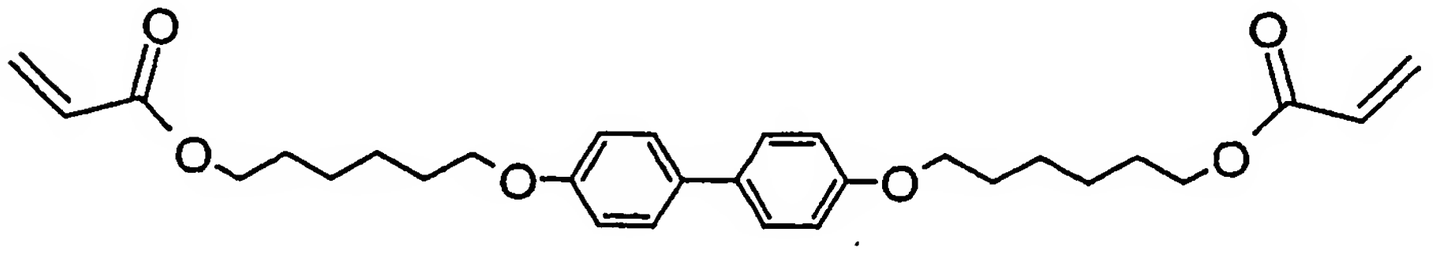
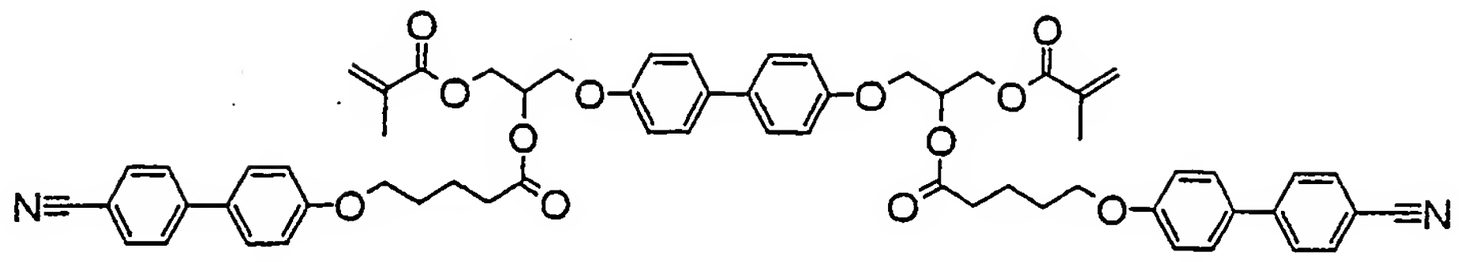


IVa



Va

wherein P^1, P^2, x, y, L^1 and L^2 are as defined in claim 9.

14. Alignment layer according to at least one of claims 1 to 13, characterized in that the precursor material comprises 0.5 to 4 % by weight of RMs.

15. Polymer precursor as defined in at least one of claims 4 to 14.

16. Use of an alignment layer according to at least one of claims 1 to 14 as substrate and/or alignment layer of liquid crystal (LC) materials.

17. Laminate comprising an alignment layer according to at least one of claims 1 to 14 and a film comprising polymerised or crosslinked LC material.

18. Method of preparing a laminate according to claim 17 by providing a layer of a polymerisable LC material onto an alignment layer according to at least one of claims 1 to 14, optionally aligning the LC material into uniform orientation, and polymerising the LC material.

19. Use of a precursor material, alignment layer or laminate according to at least one of claims 1 to 17 in optical, electrooptical, information storage, decorative and security applications.

20. Optical component or device comprising at least one precursor material, alignment layer or laminate according to at least one of claims 1 to 17.

21. Liquid crystal display comprising at least one alignment layer or laminate according to at least one of claims 1 to 17 or a component according to claim 20.